Prevalence of Subclinical Hypothyroidism in patients with Chronic kidney disease

Abstract

Background:

Subclinical hypothyroidism is a concept recently developed with the advent of sensitive TSH assays. Being an independent predictor of cardiovascular morbidity and mortality, it is 4 -10% prevalent in the general population. A higher prevalence of clinical and subclinical primary hypothyroidism exists in CKD patients leading to ESRD earlier. This study was intended to evaluate the prevalence of thyroid abnormalities mainly Subclinical Hypothyroidism in various stages of CKD patients, who are not undergoing dialysis.

Aims and objectives:

To study the prevalence of Subclinical Hypothyroidism and its correlation with various stages of chronic kidney disease.

Materials and methods:

50 CKD patients in the predialysis phase and 50 healthy controls, who attend the regular OPD in SMC&H are selected for our study. Serum urea, creatinine, total protein, TSH and free T_4 levels are estimated. Staging of CKD done with the eGFR calculated using MDRD formula and the prevalence of subclinical hypothyroidism with TSH levels <10mIU/mL are studied in these patients and compared with the control population.

Results:

Subclinical hypothyroidism is more prevalent in CKD patients (40%) when compared with the general population (6%). Subclinical hypothyroidism was found to be 8%, 10%, 20% and 12% in the stages II, III, IV and V of CKD patients and it gradually increases as the stage of the CKD advances. As the eGFR falls, TSH starts increasing due to alteration in the hypothalamo-pituitary axis, TSH glycosylation and diurnal rhythm. It may also be due to altered metabolism of thyroid hormones and decreased peripheral conversion of T_4 to T_3.The exact mechanisms linking CKD and hypothyroidism are still unclear.

Conclusion:

From the results of our study, we conclude that the prevalence of Subclinical hypothyroidism is high among all the stages of CKD patients. Also the incidence of thyroid abnormalities increases, as the stage of CKD advances with fall in GFR. Need for treatment depends on the patient's clinical scenario and decision of the clinician based on the presentation. Many more clinical trials are needed to prove the need for thyroxine replacement.

Future perspective:

Follow-up of patients to know whether patients with thyroid abnormalities progress to ESRD earlier in comparison with patients without thyroid abnormality and also the incidence of cardiovascular morbidity and mortality in these patients.

Key words: Chronic kidney disease, ESRD, Subclinical hypothyroidism, MDRD formula, TSH, free T_4 levels.